

*The Royal College of Surgeons
with the author's compliments*

ON

THE GLANDERS

IN THE

HUMAN SUBJECT.

BY JOHN ELLIOTSON, M.D. CANTAB. F.R.S.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS, PHYSICIAN TO, AND LECTURER
ON THE PRACTICE OF MEDICINE IN, ST. THOMAS'S HOSPITAL, VICE-
PRESIDENT OF THE SOCIETY, ETC.

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Read June 1, 1830.

THOMAS MASKALL, aged seventeen, apprentice to his uncle, a tailor at Woolwich, was admitted into George's Ward, St. Thomas's Hospital, under the care of Dr. Roots, on Thursday, March 19, 1829. The upper half of the face, including the eyelids and the nose with the portion of the cheek on each side, especially on the right, was greatly tumefied, so that the eyes were closed. The eyelids and swollen portions of the cheeks were red and hot, dry and shining, but the nose was dark-coloured, and on its right half black,

cold, and senseless. From around the gangrened portion of the nose and some other points a little pus was oozing, as well as a thin dark-coloured fluid, and, *from the nostrils a thick discharge of a deep yellow colour, here and there a little bloody, was taking place*, exceedingly copious from the *right* nostril. Several *hard* phlyzacious pustules existed on and immediately around the nose, still principally on the right side, and in various parts of the trunk and extremities. Tumefactions were observed in both fore-arms and in the back of the right hand. Some of these were hard, others softening into suppuration. The temperature was high; the pulse 136, and sharp; the tongue white and rather dry. The respiratory murmur was indistinct at the right lower part of the chest, and the respiration quick and difficult. The gums were slightly turgid.

It was stated that twelve days previously, (Saturday, March 7,) he had been attacked by pain in the right hypochondrium, extending up the chest, dyspnœa, and rigors: that he took ten grains of pilula hydrargyri, and the next day felt quite well. The pain and dyspnœa, however, returned on the day following, but subsided by the end of the week under the use of leeches and purgatives. On the Sunday, five days before his admission, a pimple was said to have appeared upon the right side of his nose; while this increased and suppurated, the surrounding parts

swelled and grew red, and the state of things became such as I have already described.

About five weeks before his admission, a gonorrhœa had begun, for which he believed that he took mercury, by the direction of some irregular practitioner, and the condition of his gums rendered this extremely probable.

Fourteen ounces of blood were taken from the arm, and became both buffed and cupped. Some of the tumefactions were cut into, and large quantities of pus discharged. Lint soaked in a solution of the chloride of soda and covered with a poultice of stale beer grounds was applied over the nose fresh every hour, and a common poultice to the abscesses which had been opened. An ounce of castor oil was given, and the diet restricted to slops, milk, and arrow-root.

Late in the evening, two greenish and very offensive stools were passed involuntarily, and a little delirium was observed. Tumefactions had begun upon both legs, one upon the left hand, and one upon the right elbow. The next morning more tumefactions were seen upon the extremities, red as all the others had been: but the others had now acquired a purple tint, and the wounds looked dark. The forehead was swollen and red, and more pustules had formed upon the face. There was constant agitation, frequent de-

lirium, profuse diarrhœa, and there had been no sleep. *Mistura cretæ composita* was prescribed, sixteen leeches applied to the temples, and strong beef-tea added to the diet.

In the evening the diarrhœa was checked; but the upper lip had grown very dark, sordes encrusted the teeth, the surface, still hot, was covered by a profuse sweat, and many new hard pustules were seen upon the trunk and extremities. The pulse had become soft, and was small and rapid. Twenty-five minims of *tinctura opii* were given in the first dose of the *mistura cretæ composita*, and one grain of the *sulphas quininae* every four hours prescribed. The *oleum terebinthinæ* was substituted for the solution of the chloride of soda.

He was calm after taking the opium, but about four o'clock in the morning was observed to breathe with more difficulty, to be unable to swallow, and to be constantly delirious; and from that time he sank gradually, and expired at six.

I was not present at the inspection, but understand that there were proofs of a violent pleuro-peripneumonia in the lower part of the right side, and that two ounces of healthy pus were found between the adherent lung and diaphragm. A dark red patch existed in the stomach, and several at irregular distances throughout the intestines. The

mucous membrane of the stomach was very lacerable at that spot. The other viscera, and all the contents of the head as well as the veins of the extremities, were reported healthy: but the mucous membrane of the nostrils was not examined. The abscess which had been opened in the back of the right hand communicated with the joint of the metacarpal bone of the middle finger, but those on the arm did not communicate with the elbow.

The case was perfectly new to us. It excited great interest, but its nature was a mystery. Dr. Roots wrote simply, "Gangræna nasi; suppuratio palpebrarum," on the ticket at the foot of the patient's bed. The reporter to the *Lancet* headed his account "Gangrene of the Nose, with extensive suppuration of the cellular membrane;" adding, that the case was considered of rare occurrence, and from the time of its admission excited a good deal of interest: while the reporter to the *Medical Gazette* headed his account, "Spontaneous Gangrene of the Nose,—abscesses in various parts," subjoining the query, whether these, together with the abscesses in the lungs, and the inflammation of the mucous coat of the intestines, "were the effects of mercury?" This was asked in consequence, I think, of some one having stated, at the patient's admission, that it was a variety of irritation or erythema, which he had frequently

witnessed in the cheeks of children after the employment of that mineral*.

It is singular that the profuse discharge which took place from the nostrils, and from one especially, is omitted in these reports, and, indeed, in every account that I have read. The appearances suggested to me the idea that some deleterious matter had been introduced into the system. I enquired if he had probably been in the way of catching such a complaint, if he knew of any one similarly affected, and if he had taken any other food than what was habitual to him and good or than what was used by the rest of the family. But all these questions were answered in the negative, and, therefore, when asked for my opinion by the pupils, I declared myself perfectly at a loss.

On Friday, the 26th of the following June, it being my week to admit patients, I was surprised to find another young man, named Thomas Dixon, and twenty-one years of age, lying in bed in

* I believe that the gangrene of the cheek, seen occasionally in children, and sometimes attended by erythema and swelling, is ascribed unjustly to any mercurial medicines that may have been given. It is quite as frequent after typhus, variola, rubeola, and scarlatina, &c. when no mercury has been exhibited. See an instructive paper upon this affection, under the title of *Cancrum oris*, by Dr. Cuming, in the Fourth Volume of the Dublin Hospital Reports, in which references to preceding authors will be found. The symptoms of the disease are totally different from those of the glanders.

William's ward, with the same symptoms as the former.

The nose and surrounding parts were exceedingly swollen, so that the left eye was closed completely, and the right nearly. The tumefied parts were hot, and of a bright red, with the exception of an inch of the left half of the nose, which was of a mulberry colour: *a profusion of deep-yellow tenacious mucus, with a few streaks of blood, exuded from each nostril*, but particularly from the *left*. Several *hard* phlyzacious pustules existed on the nose and adjacent parts, on the arms, thighs and legs, and each was surrounded in the latter situations by a blush of red. A patch of the same colour was observed on the left elbow. The temperature of the surface of the abdomen was 107° . The pulse 144, broad, soft, and weak, so as to be rather an undulation than a pulsation. The respiration 30, and so shallow, that the chest scarcely appeared to move. The tongue was dry and rough, and of a brownish red. The skin sweated copiously. He gave rational answers in a fluttering voice, but immediately afterwards always fell into a little incoherence. His movements were tremulous, and, though otherwise exceedingly tranquil, he tossed his arms about, and requested that his wrists might be tied together to prevent this involuntary action. He complained of coldness in the lower ex-

tremities, which however were sufficiently warm, though cooler than the rest of the body.

It appeared that he worked with his father as a blacksmith, at Lambeth, but was not a shoeing smith: that two months previously he had drunk a large draught of cold porter, when hot and perspiring, and had not since been perfectly well: that three weeks previously he had been attacked by acute rheumatism, first of the lower and afterwards of the upper extremities, but had recovered sufficiently to walk with crutches, and on Tuesday last expressed to his friends how happy he was to find himself recovering so fast, and sat some time in the open air, on the bank of the river, drinking a pint of porter in the afternoon, and also lounged about the mews: that, early on the very same evening, a pimple arose on the left side of the nose, and became very hot and painful, and the next morning a blush of inflammation was observed around it, which rapidly grew more intense, and he felt exceedingly weak and ill: that he was brought to the Hospital on Thursday evening, and ordered colchicum by the apothecary. He assured me that he had never suffered or even run the risk of contracting any venereal affection, and was not aware of ever having taken mercury. He had experienced no head-ache, nor pain anywhere, except in his nose, the great heat and throbbing of which had distressed him; and at his admission he said his throat was sore.

Notwithstanding his youth and good constitution, and the excellent health in which he had been on the preceding Tuesday afternoon, with the exception of a rapidly declining rheumatism; and notwithstanding the intensely bright redness of the eyelids, upper parts of the cheeks, and around many of the pustules; I considered that the gangrenous aspect of the left side of the nose and of many of the pustules, the mild delirium, the tremulous movements and voice, the profuse sweating, and the want of force in the pulse, so different from its state in Dr. Roots's case when first prescribed for, indicated the employment, not of evacuants, but of means calculated to tranquillise and support. I therefore ordered m. l. of *tinctura opii*, with gr. x of the *sulphas quininae* to be given immediately, and the latter to be repeated every hour.

In two hours I visited him again, but found the disease had made great progress in overpowering the system. The elbow, which had been red only before, was now suppurating: the pulse was 166, still smaller and fluttering, and the restlessness was extreme. I instantly gave him m. l. more of the *tinctura opii*, directing the *sulphas quininae* to be continued, and as much strong beef-tea with eggs diffused in it to be supplied as he would take. Neither the nourishment, however, nor any more of the *sulphas quininae*, could he be prevailed upon to taste: but he fell asleep soon

after this second dose of laudanum, and slept tranquilly, waking occasionally for a minute and turning on the other side, till four o'clock in the morning, when he became very restless for an hour and then expired.

As in the former case, the father was present at the inspection, and he would not allow the head to be examined, or any incision to be made which would disfigure. Many parts of the lungs were gorged with blood and frothy fluid, and the corresponding bronchial branches were very dark; numerous papillæ with pointed black summits were seen at the end of the ilium, and clusters of minute greyish-black points throughout the small intestines, and most abundantly at the commencement of the duodenum; and the walls of the left ventricle of the heart were very thick: but nothing was detected, either peculiar or important, or calculated to throw the faintest light upon the disease,—a disease, which to me I confess was truly awful, from its suddenness, rapidity, gangrenous symptoms, unknown source, and seemingly uncontrollable power.

While I was standing at the bed-side, considering in silence the case before me, its identity in nature with that which I had seen in March appeared certain, and the disease as certainly to be a specific eruptive fever. I therefore stated to the pupils that, while at the occurrence of the

former case I had only the idea of some deleterious agent without being able to imagine of what kind, I now felt satisfied that this agent in the two cases was a morbid poison,—a poison furnished by a living system under the same disease. I put the same questions to this patient and his friends as in the former instance, and received the same negative answers.

The nature and source of the morbid poison, of the existence of which I felt satisfied, remained a mystery; I could not even guess at them:—when, on the cover of the Medical Gazette for July 4th, I read, “Fatal Case of *Acute* Glanders in the Human Subject.” It instantly flashed upon my mind that this must be what I sought.

The morbid poison could not have been generated, because the clean appearance of the patients, and the good circumstances and respectability of their friends with whom they lived, were such as to preclude the generation of any morbid poison. Although evidently acting but seldom upon human beings in this country, still its residence among us was certain, if it existed, for neither patient had been near persons from abroad. Yet no other person in the vicinity of either patient, or anywhere that either had been, was known to have had such a disease. The morbid poison and its residence among us, of which I entertained no doubt, together with the circumstance of its rarely

affecting human beings, now seemed fully explained by the supposition, that the disease was one common to some of our brutes; and the profuse discharge from the nostrils, and the tumours and tubercular pustules on the surface, agreed with the supposition, that this disease was the glanders.

I had no time, however, to open the number of the Gazette immediately; and, on calling upon Mr. Alcock, he enquired if I had seen the Gazette, because he had read a case in it which he thought might throw some light upon the two which I had so frequently mentioned to him, and the inspection of one of which he had witnessed. I read the case, and found my prepossession fully substantiated.

A fine, healthy corporal in the 2d regiment of Dragoons, the surgeon of which, Mr. Brown, is the narrator,—aged 38, suddenly awoke, while stationed at Caher in Ireland, in the night of the 16th of April, with rigors, head-ache, and slight irritability of stomach, which in the morning were joined by depression of spirits, general disturbance, and stiffness and severe and constant pains of all the large joints, aggravated on the slightest motion. The pains increased to an alarming degree, but especially in the left shoulder, which was somewhat tumefied at the scapula, but not inflamed. On the 24th, the tumefaction was considerable, and of a livid hue. Similar swellings,

but smaller, took place on the arms, legs, thighs and sacrum; all, like it, hard, insensible, and of a chocolate colour, and at first a slightly discoloured puffiness only, but becoming, after twelve or fifteen hours, of a deep vermilion, and soon of a dark brown; the integuments growing thick and callous, slightly cracking, and exuding a thin and acrid sanies. One precisely similar, and of large size, appeared upon the left temple, and the eye-lids became tumefied. "*The right nostril was gummed with an inspissated discharge.*" The "posterior fauces" were much inflamed, and nearly of a purple hue. On the 28th, several "*warty pustules*", acquiring about the size of a pea, arose high above the skin, in various situations around each of the tumefactions, particularly numerous and large over the right side of the neck and shoulders, and on the inside of the arms and thighs, and were found after death to be filled "*with a violet-coloured inspissated lymph.*" The thirst was always great, the tongue foul and parched: the pulse from 88 to 96, full, but easily compressed: the blood, abstracted at the commencement, buffed, but much attenuated; the urinary and alvine excretions "always natural in every respect." "The copious exhibition of tonics and antiseptics" had not the slightest effect: and at the date last mentioned,—the 28th, many of the tumors, particularly that upon the shoulder, were rapidly running into gangrene; the pulse was scarcely perceptible, the surface bathed with a cold, clammy sweat; imperfect stupor, and mild

muttering delirium occurred, and he died upon the morning of the 30th.

Neither the thoracic nor abdominal viscera presented any vestige of disease, but, as there was in this case no impediment to a full examination, the head, extremities, and walls of the trunk were carefully inspected. A cluster of tubercles was found in the cellular membrane, exterior to the pericranium of the left superciliary ridge, and in the right frontal sinus, exactly, according to the veterinary surgeon of the regiment, similar to those observed in the frontal and other sinuses of the horse after acute glanders. On dividing the various livid tumors of the surface down to the bone, "the muscles appeared perfectly decomposed, and of a dark liver color, exhaling a peculiarly fetid odor, with points of purulent matter, as it were infiltrated everywhere through its entire substance, resembling much a hepatized or tuberculated lung"; and under each "was a cluster of grey circular tubercles, the whole composed of fine cellular tissues, enclosed in small cysts, proportionate in size and consistency to the extent and duration of the tumor, and firmly attached to the periosteum." The muscles generally, even perhaps the heart, appeared pale and flabby, "and the cellular membrane infiltrated with a yellow serosity."

"It appeared that the patient had had the sole charge of a glandered horse for some time, which

had been destroyed on the very evening of his attack; and that he had skinned him, and exerted himself a good deal in cutting up and burying the carcass. But these circumstances did not at first create the least suspicion, and his complaint was considered a very severe case of acute rheumatism, and treated as such."

If the two cases which occurred at St. Thomas's Hospital corresponded perfectly with each other, they did not less perfectly correspond with this; as perfectly, at least, as various cases of scarlatina, small-pox, and other specific fevers. I felt assured that an active investigation would discover that our two patients had been in the vicinity of a glandered animal, and proceeded without loss of time to the house of my own patient's father at Lambeth. The father was not at home, but I saw a friend of the family, who had accompanied the father to the hospital. He said that, though a blacksmith, the father was not a shoeing smith, and kept no horse, and that the son could never have been among horses. I requested him, however, to conduct me to the father's forge. This I actually found situated in a neighbouring mews. On inquiring of the father and his men whether there had been any glandered horses in the mews, near which the son might have gone, they shook their heads, and declared not. A youth, however, among them, who, I afterwards found, was the brother of the deceased, suddenly

said, "Why, don't you recollect there was a glandered horse in the next stable for six weeks, just next the corner where Tom used to work?"—and then shewed me, that the boards which separated the stable from the particular part where the poor fellow had always worked, and against which the horse's head had been, were so defective, that the discharge from the animal's nostrils had come through and occasioned so great a stench, that he frequently said he should be unable to work if the horse was not taken away. I learnt further, that, while it was being led to the knackers, about a month before the commencement of his rheumatism,—about two months before the affection of the face, and his death,—it fell down exhausted at the door of the forge; that he went out and patted it about the head as it lay, and took hold of the head while they all endeavoured to make the animal rise; that he had a habit of continually wiping his nose with the back of his hand, and for some time had been troubled with such pimples on his forehead and about the nose, as are common to persons of his age. The horse had not the farcy as well as the glanders, and became diseased from being placed in a stable of the mews in which were two or three glandered horses.

I was thus encouraged to spare no pains to ascertain whether Maskall, the first patient, had been near a glandered horse. No more mi-

nute address than Woolwich appeared upon the hospital books; but as I had been informed that he was a helper in stables, and brought to the hospital by a coachman, I anticipated little difficulty in discovering his connexions. I accordingly went to Woolwich in July, and, with the assistance of a friend in the medical department of the artillery, inquired at the inns and of a number of persons: but in vain. My friend inquired, during the next week, at several inns in the neighbourhood, and likewise in the dock-yard, as some one about the Hospital told me that he had heard the father worked there. But no person knew any thing of the case, or of the name of Maskall. Enquiries in London of all the Woolwich and Blackheath coachmen were equally unsuccessful.

I despaired now of obtaining any clue, when, accidentally mentioning the circumstances in October before some of the students, two informed me that they resided at Greenwich, and very kindly promised to commence a search. They did so, and fortunately met with somebody who knew an uncle of the lad, the tailor to whom he was apprenticed, and likewise the father. I instantly wrote to the latter, requesting to see him in town. He believed that his son had died of secondary symptoms of syphilis, and assured me that the poor fellow was always with his uncle the tailor, and could never have been in the way of horses. Before he left me, however, I sent for

the sister of the ward, satisfied that the father must be mistaken. It was from her that I had originally received the impression of the boy being a helper in stables. The coachman who came, as well as the father, with the lad, was said by the latter to be only the driver of the vehicle which was hired to convey him. But the sister stated that, late in the evening of the day on which he was admitted, after the gates were closed, a young man, dressed like a groom, came to the Hospital, very much heated, earnestly requesting to see him, and saying he was dearer than a brother. Before this young man left, the sister observed to him that she supposed they were in the same line of life; but he told her no, and yet, that, for the last eight months, Maskall had spent much more time in the stables with him than anywhere else. On taking leave, Maskall was heard to call him Richard. The father seemed much surprised at all this; and no doubt was entertained that we now possessed a clue. I afterwards, however, received two or three letters from the father, stating his inability to discover that his son had been near horses or been acquainted with any stable-people.

In the beginning of May, I sent a faithful and very intelligent person to Woolwich, for the purpose of making inquiries of the youth's uncle and any others in the place who might be likely to give him information. The uncle knew no friend

of his nephew who was among horses and named Richard, and the day was spent in equally fruitless inquiries among the various persons with whom the lad was said to have been acquainted. It was, however, ascertained, that the next-door neighbour of the uncle had a miserable worn-out poney, covered with sores, and kept in a filthy wretched shed opposite the two houses, for some time before the youth's illness; that this dragged a little cart in which he frequently got a ride, helping to harness the animal and going to it in the shed, and that it was sent to the knackers a few months after his death. This neighbour and his family declared that the animal was worn out with mere age, and were evidently disinclined to say much upon the subject. On sending the same person to Woolwich a second time, he learned from persons who could be depended upon, that the poney really had the glanders and farcy.

Although the friends did not remember whether the lad had any pimples on his face about the time of his seizure, the father distinctly recollected that he had been much troubled, some little time back, upon both his forehead and chin, with such as are common during the first years of puberty. Nothing is more possible, than that he still had some of these chronic pustules, and that glandered matter came in contact with one or more that were open.

I happened in the spring frequently to meet Mr. John Parrott of Clapham, and in the beginning of March to mention to him the two cases which we had last year in St. Thomas's Hospital, and my conviction of their having been instances of glanders. Two or three weeks afterwards, he said that he had the day before been summoned to a patient with a very severe acute affection of the knee-joint, apparently rheumatic, and that delirium was now beginning; that he had proposed for me to see the patient, but that the father declined it for the present. The next time I met Mr. Parrott, he informed me that the patient was no more, and had died, he was convinced, of the disease I had been speaking of to him,—the glanders. This undoubtedly was the fact, and the following particulars were obligingly given me by Mr. Parrott.

“ Mr. John Vass, aged 23, a pupil of the Veterinary College, had under his care at Clapham, where his father resided, a horse affected, the father said, with ‘farcy glanders’. The ring-finger of the right hand, and the absorbents and axillary glands, became inflamed and painful; but whether after any wound or abrasion could not be satisfactorily ascertained. The finger suppurated, and was opened; the aperture healed quickly, all the inflammation subsided, and in a few days he was considered free from complaint, except that his temper was irritable and his appetite somewhat im-

paired. But in a few days more he began to feel headache and pains in his limbs, particularly in the right-knee. On the following day, (March 27,) Mr. Parrott first saw him, and could detect no tenderness, swelling, hardness, nor trace of previous wound in the extremity originally affected. The pain in the knee was very severe, and aggravated by motion, but unattended by heat, swelling, or redness. The pulse was quick and full; the tongue white and moist; the skin hot, and bedewed with sweat; the urine scanty, high-coloured, and turbid; the countenance anxious; the head painful; and there were signs of cerebral disturbance, together with extreme restlessness; the throat was sore, and covered with aphthous specks; the palpebræ were swollen, and the eyes much suffused. All these symptoms continued with unabated violence for eight or nine days; and in the mean time, numerous soft swellings took place in the extremities, the small joints became painful and rather red, the right knee enormously swollen, the absorbents of the right arm knotted, painful, and in many points distinctly fluctuating. *A copious sero-mucous discharge, occasionally a little bloody, occurred from the eyes and nose, the schneiderian membrane was excessively red and nearly excoriated, and the eyes closed.* A pretty abundant eruption, very similar to small-pox, but larger, and *hard*, appeared in different parts, but particularly in the neck. There was scarcely any sleep, but occasional delirium, and

at length convulsions, and the patient expired on the 7th of April, while changing his linen. Unhealthy pus was found in the absorbents of the arm; the bursa of the knee contained a large quantity of pus, with flakes of coagulable lymph, a considerable abscess existed on the inner side of the knee-joint, and the periosteum was detached to the extent of between three or four inches. No other parts were examined.”

It may be useful here to present, from a veterinary writer, a description of violent acute glanders in the horse and ass. “The pituitary is very red, very much inflamed, and presents little erosions, which take place rapidly, and become chancres, if we must in compliance with custom so call them, with edges thicker and more exuberant than those of the milder form of the disease. Sometimes the lips and the end of the nose swell, and afterwards the ulcerations commit more extensive ravages, and give rise to a discharge of a purulent appearance, and occasionally of a disagreeable smell. A fetid, purple, and perhaps bloody sanies, is mixed with it from time to time, at least in some instances, and at length the nasal membrane looks gangrenous. The discharge continues, and becomes more abundant; even blood issues from the nose. The sublingual glands, which are much swollen in all the forms of the

disease, are more painful than in the mild acute glanders. The conjunctiva and nasal eye-lid (*membrana nictitans*) are at first inflamed, injected with blood, and afterwards acquire a violet hue; the eye-lids swell, and the eyes discharge. The local phlegmasia soon extends to the surrounding parts; respiration becomes laborious, the superficial vessels successively congested, and the animal dies, in spite of all we can do, frequently in a few days, at other times after a longer or shorter interval. If the disease is protracted, the symptoms occasionally, though rarely, relax, and the inflammation declines; the animal then appears partially to regain its powers, and may be to a certain degree useful: but the state of the pituitary membrane, and of the *auge*, and the permanence and the character of the nasal discharge, show that the acute stage has degenerated into the chronic. It is in this form especially, that attacks of glanders may be considered epizootic. That violently acute glanders is always speedily fatal, and never becomes chronic, is disproved by the following fact. In a stable of eighteen horses and three asses, all of which were affected, ten died within the first days of the attack; four, after the violence of the disease had abated, remained stationary for two months, and then were cut off by a return of the inflammatory symptoms,—a relapse into the acute stage. The seven which survived presented all the symptoms of chronic

glanders, and worked in the country nearly a year, when it was thought proper to kill them.”*

In many cases of both the acute and chronic forms of the disease, the discharge is chiefly from one nostril, at least for a time, and this is said by some French writers to be almost always the left. That pustules may also take place in the acute disease of brutes, with gangrene of the external parts of the face, and swellings and suppurations in the extremities, is proved by the cases of two inoculated asses, presently to be detailed.

Sir Gilbert Blane, in his *Select Dissertations*, states, that “the only examples hitherto ascertained” of infections communicable from one species to another, “are the hydrophobia, and cow-pox :” † and Mr. Colman, though aware of the occurrence of “irritation in the human subject, from glanders and farcy matter, and the secretion of a large quantity of the same poison,” declares in a letter, published in a work by Mr. Travers presently to be quoted, that “as far as his experience goes, the nostrils of the human subject are not susceptible of glandered ulceration or inflammation.”

* *Dictionnaire de Médecine et de Chirurgie Vétérinaires.*
Art. *La Morve.*

† P. 213. 1822.

In no veterinary work that I consulted, could I discover any intimation of the occurrence of the disease in the human subject. Indeed the veterinary dictionary, just quoted, declares it to be peculiar to monodactylous animals*. On applying, however, at the Veterinary College, I was informed by Mr. Sewel that he had known *two* instances, and referred me to Mr. Travers's book on Constitutional Irritation for the particulars. They were cases of *chronic* glanders. The *first* happened in a veterinary student, who slightly injured his hand in examining the head of an ass, which had died of inoculated glanders. An ulcer ensued, and pain and inflammation of the superficial absorbents took place in a few days, and soon ceased. But the absorbents of the opposite arm became affected, and an abscess formed in it, and another at the lower part of the back. He became hectic, and at length suppuration occurred also in the lungs, in one of the kidneys, and successively in each knee-joint; after which he died.

Mr. Colman inoculated an ass over the maxillary gland, and at the margin of the nostrils, with the matter of the abscess in the arm, and likewise rubbed some upon the schneiderian membrane. Glanders and farcy were the result, and the animal died on the twelfth day of the experiment. Precisely the same was done with another

* P. 134

ass by the patient's brother; but no effect ensued, as the matter was not employed for several days and had been left exposed to the air. He repeated, however, the experiment upon the same animal with fresh matter, and it perished of glanders and farcy upon the fourteenth day.

The first ass was about a year old: the second a year and a half. In the first, the maxillary gland became tender on the second day; more so, and likewise enlarged, on the third, when the nostrils began to discharge: in the second, the maxillary gland enlarged on the third day, and the lip at the spot of inoculation swelled; but the nostrils did not discharge before the sixth. In the first, an absorbent vessel, like a farcy chord, ran across the cheek from the gland, on the fourth day; and another, inflamed and enlarged, was felt inside the thigh of one hind leg on the sixth, so that lameness and "complete farcy" were established, although the virus had been applied solely to the head: in the second, the absorbents of the face were not affected, but those inside the thigh of one hind leg enlarged upon the eighth. In the first, another farcy enlargement took place upon the stifle of the same leg on the seventh day: in the second, the absorbents of the other hind leg inflamed on the tenth day, and several tumors formed in both thighs upon the twelfth. Anorexia, quickness of pulse, difficulty of breathing and restlessness occurred equally in both; but in the

second only is it mentioned that *pustules* broke out upon the lip, followed by ulceration, and the *sloughing* of a large portion completely off. Pus was found in the absorbents of the diseased thigh of the first: the second was not examined*.

As the farcy was induced in the two asses no less than the glanders, I shall take the liberty of subjoining an account of this disease also from a veterinary work. "The farcy generally appears in the form of small tumours, called *buds* by farriers, or small ulcers, about the legs; sometimes on the lips, face, neck, or other parts of the body. These tumours are, in some cases, so small, so few in number, and create so little inconvenience to the animal, that for a time they escape observation; at other times they are larger, more numerous, painful to the touch, and spread more rapidly; and in these instances, a general swelling of the limb often takes place, particularly when the hind legs are attacked, and some degree of lameness ensues. The tumours or *buds* are at first hard, but soon become soft, and burst, degenerating into foul ulcers, of a peculiar appearance. The edges of the skin that surround the ulcer terminate abruptly, and the surface of the sore has a pale glossy appearance." "The lines

* An Inquiry concerning that disturbed state of the Vital Functions, usually denominated Constitutional Irritation. By Benjamin Travers, Esq., F.R.S., Surgeon to St. Thomas's Hospital.

of communication between the buds, or ulcers, are generally very observable; particularly when they occur on the inside of the limbs, where the superficial veins are large, as in the thigh. They consist of what the farriers call *corded veins*, but in reality are inflamed and enlarged lymphatic or absorbent vessels.” *

The appellations of glanders and farcy appear to be given to the same disease affecting merely different parts. For farcy continually terminates at length in glanders, and glanders is often soon joined by farcy, as we have seen happened in the two asses inoculated from Mr. Turner; and the matter of both glanders and farcy is found in experiment to produce either or both diseases †. After the two asses were inoculated from Mr. Turner, the nostrils were first affected, but the absorbents of the extremities inflamed and suppurated in a few days. Farcy, on the other hand, is described as occasionally acute, and soon joined by glanders. “The commencement of farcy,” says Mr. White, “is sometimes more violent than has yet been described. The limbs swell to an enormous size; foul ulcers appear in various parts; the nose swells, and discharges fetid matter; and

* A Treatise on Veterinary Medicine. By James White. pp. 7, 8.

† Mr. Colman has not only made experiments proving this, but asserts that he induced glanders in a healthy ass, by transfusing into it the *blood* of a glandered horse.

the horse breathes with difficulty, from the swelling and ulceration of the nostrils. This malignant kind of farcy is not very common." "When it does happen, however, it speedily destroys the animal." *

The three cases of acute glanders which I have detailed, may be considered as instances also of acute farcy, on account of the suppurations which occurred in the extremities. In the chronic case now quoted from Mr. Travers's book, the symptoms were those of only the farcy form of the disease, but in the *second* chronic case, the disease began as farcy, and at length produced the symptoms of glanders.

"Nimrod Lambert, a healthy hackney coachman, æt. 32, in January, 1822, infected a chap on the inside of the right thumb, by inserting it into the nostril of a glandered horse, to pull off a scab. He remembered to have afterwards wiped the thumb with a wisp of hay. In the space of six hours, he was seized with violent pain and swelling of the thumb; it inflamed rapidly, upon which he applied a poultice to it, and took some salts. On the third day he was suddenly taken ill whilst driving, with cold shivers and giddiness, and states that he entirely lost the use of his limbs for seven hours. At this time his arm pained him

* l. c. pp. 9, 10.

much all the way up, and on the following day it was streaked with red lines, and excessively swollen. The arm-pit was also much swollen and tender. In the evening of the fourth day he was carried to Guy's Hospital, where he lay during twenty-four weeks. Superficial collections of matter formed successively in the course of the absorbents. The corresponding portions of the integument sloughed, leaving extensive ulcers which discharged an unhealthy and fetid matter. The glands at either angle of the lower jaw, and those of the groin became swollen, and he was much afflicted with pain between the eyes and down the nose, and exulcerations of the membrana narium, attended with discharge. During the progress of the local disease he had much constitutional illness. He totally lost his appetite, and was oppressed with nausea; complained of severe pains, with swimming in the head, and occasionally wandered in mind. He had also much pain through the whole course of the spine, especially in the region of the kidneys. His urine was thick, and discoloured, and fetid; his motions were slimy and purulent. Expecting to die, he quitted the Hospital, and lay at home the remainder of the twelvemonth, in a state of great emaciation, from the continued discharge of his sores, his inability to take food, and to procure any refreshing sleep, even with the assistance of opiates, which he took habitually. Despairing of aid from the profession, he applied to an experi-

enced female practitioner, who administered a decoction of herbs, which he invariably vomited, but to which nevertheless he ascribed his recovery. At the end of the twelvemonth, his health gradually returned, the arm began to heal, and he became comparatively hearty, and resumed his occupation, though with much inconvenience, owing to the distortion of his hand by the retraction of the thumb and forefinger, in the cicatrization of a long line of abscesses, reaching to the middle of his upper arm. After six weeks, this cicatrix ulcerated afresh, and healed slowly. He is still subject to wandering pains in the head, both sides of the neck, loins, and groins: is not so strong and so fleshy as formerly, but has a good appetite. He has a great heaviness and disposition to sleep during the day, and at the end of two years and a half from the breaking out of the disease, considers his constitution broken, and despairs of being ever again the man he was." An ass was inoculated by Mr. Sewell with the matter of this man's sores, and died glandered.

That the chronic diseases in these two cases was that which is called glanders or farcy, according to its situation, cannot, I presume, be disputed, because the disease induced by the secretion of the diseased animals produced a secretion in the men which again induced the original disease in other animals. It is right, however, to mention, that Mr. Travers relates these cases as

examples of mere "irritation", such as arises from poisonous wounds in common dissection, and not as a specific disease, or the result of a *morbid* poison; and remarks that "the intervention of an animal of a different species, preserving the contagious quality in its morbid secretion, yet insusceptible of the specific disease, is truly extraordinary." It would be so unquestionably, if the fact. But to suppose a disease, produced by the matter of a disease of another system, and engendering matter again producing the original disease in a third system, not to be identical with the original disease, is to me impossible. The correspondence, however, of the symptoms, in the various cases which I have laid before the Society, with the symptoms of the disease, in both the acute and chronic form in which it appears in brutes, is, I trust, too perfect to leave any doubt that the human race is susceptible of the disease. A third case is related in Mr. Travers's book, by the patient, Mr. Nollen, a veterinary surgeon of Kidderminster, which in all probability was also an instance of the disease; but as no experiment was made with the matter secreted, and the symptoms were comparatively mild, its specific nature cannot be proved.

"I had occasion to administer a ball to a horse affected with glanders. At the time, there was a slight abrasion of the skin on the joint of my thumb, which I suppose became inoculated from

coming in contact with some of the discharge from the horse's nostrils, for in a few days it became a painful sore, the inflammation having a very unhealthy appearance. The sore was poulticed, and in a day or two an eschar was formed, on removing which an ulcer was exposed, having several small pits or cells, containing a thin, semi-transparent fluid; this sore was followed by many others of a similar description, affecting chiefly the hand, the glands of the axilla, the nates, and the neighbourhood of the knee-joint. This took place on one side, the other arm and leg not being affected. The irritation, I presume, from so many sores, affected my general health considerably, with loss of appetite. My medical attendant prescribed the blue pill, and the use of the warm bath, which I continued for several weeks, until having occasion to go to town, I consulted some of the first medical men, who recommended me to drink the decoction of sarsaparilla. I took it for about a month: after that time no ulcers appeared, those already existing assumed a healthy appearance, and healed quickly, and from that time to this I have had no return of the disease."

The symptoms of chronic glanders in the horse are thus detailed by Mr. Blaine*. "An increased and diseased secretion from the membranes of one or both nostrils, continually flows in small or

* The Outlines of the Veterinary Art. Edit. 3. 1826. pp. 458, 9.

large quantities. This discharge is seldom at first perfectly purulent, but is more glairy, thick, and not unlike the white of egg, and it sometimes continues thus for a long time: at others it soon becomes purulent, but even then there is always a degree of viscosity and gluiness in it, that sticks the nostrils together, as it were, from its tenacity, differing from other pus, and which very circumstance strongly characterises the complaint. The general color of the schneiderian membrane becomes changed, first to a violet color, and afterwards to a leaden hue. As ulceration takes place, the discharge becomes bloody, sometimes sanious and offensive, which is always the case when the bones prove diseased. From an absorption of the morbid matter from the nose by the lymphatics of the part, the lymphatic maxillary glands under the jaws, through which these vessels pass, become swollen and tender, and as one side of the head only is sometimes affected with the glandered running, in such case one lymphatic gland only is tumefied, and of course, the one of the affected side." "The disease sometimes remains long without producing ulceration; at other times, on the contrary, an ulcerating process quickly appears. The ulcers have a very peculiar character; they are not unlike the venereal chancre, but usually commence by small limpid bladders, which soon ulcerate into a sore of a particular kind; and where there are several of them, they are always placed high in the course of the lymphatics."

“As the disease advances, much of the Schneiderian membrane becomes ulcerated, till at length even the bones prove carious. At an uncertain period of the disease, the lungs become affected, when hectic symptoms soon follow, with tubercles which ulcerate; frequent vomicæ also form and burst: there then appears cough, emaciation, and weakness in the loins; the hair feels dry, and falls off on being handled; the matter from the nose increases in quantity, becomes sanious, stinking, or bloody, and is coughed up by the mouth also, and in this state the animal dies.”

As two cases, and I might almost say three, of this disease have occurred within my own observation in so short a space of time, and a fourth has been recorded within the same period, all in different places, I cannot but imagine that the disease, though rare, is not of *extreme* rarity; more especially when I reflect that it is likely not to be recognised and was not in the two instances at St. Thomas's Hospital, and that it may be communicated by an abrasion of the cuticle so slight as to escape notice. I presume that an abrasion is necessary to its production, because most veterinary surgeons are satisfied by experience that glanders matter never excites the disease in the horse, even if applied to the pituitary membrane of the nostrils, while the surface is entire.

After I made the facts of this paper a subject of frequent conversation, two of my friends, Dr. Kind, a German physician resident in London, and Mr. Jacob, an excellent German scholar, who both had witnessed with me the cases in St. Thomas's Hospital, and to whom I subsequently mentioned my belief that I had ascertained the nature of the disease, have discovered some similar cases in Rust's *Magazin für die gesammte Heilkunde*.

The first was recorded in the 11th volume, 1821, by Dr. Schilling, regimental physician at Berlin.

I. Martin Rennspiess, aged 34, an artillery soldier, employed particularly in the care of horses at a veterinary school, felt unwell, and complained of rheumatism, catarrh, colic pains and thirst, but did not lie by. At the end of six weeks, on getting up one day, Nov. 11th, 1821, he felt weak and giddy, and was unable to stand. Red streaks were observed on the cheeks, and a red spot upon the ala nasi. The latter by the next day had spread all over the nose, and headache and fever came on. Before night, a livid vesicle, (*ein blau-schwarzes Blätterchen*,) appeared upon the ala, where the red spot had been, and gradually increased. The nose, eyelids, and soon the whole face, were swollen, hard, of a dingy red, and shining; and on the third day, he was taken to the Hospital.

A number of livid vesicles of the size of peas,

and with *very hard* bases, were now seen on the nose; the integuments around were much indurated, the tongue loaded with yellow fur, the pulse 76 and weak, the spirits dejected, deglutition difficult, and there was great thirst.

On the 4th day, the swelling was increased, the tip of the nose gangrenous, the upper lip beset with vesicles, and *an offensive corrosive discharge was taking place from both nostrils*. Blood taken from the arm presented a firm buffy coat.

On the 5th day, the whole nose and upper lip were gangrenous, the swelling was greater, and there were pustules on the forehead like those already described, (*neue Pusteln von derselben Beschaffenheit wie die schon früher beschriebenen.*)

On the 6th, more pustules arose on the forehead; the nose and upper lip were black, cold, and senseless.

On the 7th, red spots, passing quickly into suppuration, arose on various parts, especially on the fore-arms and legs. The nose was quite stopped up: the discharge from it mixed with blood, and so corrosive, as to destroy a portion of the slough of the upper lip. The breath stank.

On the 8th, the pustules throughout the body and extremities were more numerous and livid;

the pulse was 140; nearly the whole face gangrenous; and in the evening he had a very offensive evacuation from the bowels, and soon afterwards expired.

Dr. Schilling seems satisfied that the disease arose from the contagion of a glandered horse*, many of which wretched animals, kept for dissection and operations in the veterinary school, the patient had been looking after for some months, and had frequently, he said, washed out their nostrils.

Under the sternum in the seat of the thymus, and upon the tendinous portion of the left temporal muscle, a gelatinous yellow mass, similar to what is often met with in the cellular membrane of anasarca persons, was found. "The pericranium, especially of the frontal bone, was sown, as it were, with yellow pustules (tubercles?) of the size of millet seeds, and the bones below were sound." "The bones of the nose were decidedly carious, while the others of the face were healthy. Under every part of the skin where the earliest pustules took place, the cellular membrane was changed to a gelatinous mass, like that already mentioned. Pustules (tubercles?) were found

* The paper is entitled *Merkwürdige Krankheits-und Sections-Geschichte einer wahrscheinlich durch Uebertragung eines thierischen Giftes erzeugten Brandrose*. A curious engraving is given, which, coarsely executed as it is, shows the affection of the face to have been precisely the same as in the cases at St. Thomas's.

even in the substance of the muscles, projecting, as it were, from their fibres, and containing a puriform lymph, but not clustered like those on the head. The fibres around were half liquefied.”

As a postscript, the Editor relates the following case, by Dr. Weiss, Kreis-Chirurgus* at Neu-markt.

II. Gottfred Kliesch, aged 19, of delicate constitution, the son of poor parents, had always worked in various places, but latterly been employed in a farmer's stables at Bischdorf. According to his father's very imperfect account, he had frequently had eruptions, and frequently glandular swellings in his neck, many of which had suppurated. Whether any slight ulceration still existed on his face or neck, is not said. He had been vaccinated with success †.

* In most of the German states, some of the physicians and surgeons of every district are appointed under the title of *kreis-physikus* and *kreis-chirurgus* (district physician and district surgeon), at a very moderate salary, to examine into and report upon all medical occurrences which concern the government,—violent and sudden death, epidemics and endemics, &c.—all occurrences which belong to State Medicine, whether Juridical Medicine or Medical Police; in short, to act as a kind of coroners on an extended scale.

† The two patients at St. Thomas's, and Mr. John Parrott's patient, had also been vaccinated with success. I mention this, because the cow-pock is said by some to prevent or mitigate the distemper in dogs, and we might fairly enquire

For several weeks he had complained, the father said, of pain in the head and back, weariness, and weakness of his limbs, loss of appetite, and disturbed sleep, all which he ascribed to lifting heavy sacks of corn ; but continued at his occupation, a part of which consisted in looking after a *glandered horse*, which was with an ox in a separate stable. The stench, in cleaning out the manger, was such as continually to make him sick, and at last he took to his bed. He was sent to his parents Oct. 12th, that he might be taken better care of, and got worse daily till the 24th, when Dr. Weiss was requested to see him.

“ I found him”, says this gentleman, “ in a whether it has any power against the glanders. Mr. Copland Hutchison stated in the Society that the late Earl of Liverpool’s game-keeper at Walmer had satisfied himself experimentally, twenty years ago, that cow-pock prevented the distemper in dogs ; and I published in the *Annals of Medicine and Surgery* for 1817, London, a letter to myself, from the late Mr. Honynood, one of the members for Kent, in which he said, that both he and Mr. John Ward of Berkshire, so well known in the sporting world, from whom he learnt the fact, had employed the cow-pock for this purpose several years with uniform success, either in altogether preventing the distemper or in rendering it a very mild disease. I have no knowledge of my own upon the subject, but it deserves investigation. This Mr. Copland Hutchison began, by vaccinating half a dozen very young puppies belonging to his neighbours, when at Deal ; and he corresponded with Dr. Jenner. The puppies lived in perfect health for two years, and he then left the place and lost sight of them.

miserable bed: although the room was filled with the smoke of juniper berries, there was a bad smell around the patient. He lay emaciated, in a mild delirium, his eyes dull and sunk, his nose somewhat extended, their inner lining, as far as the outer edge, covered with superficial ulcerations, some of which also were seen on the lips; the tongue and teeth were encrusted with yellow sordes. *From the mouth and nostrils there was an abundant yellow puriform discharge;* and all the glands beneath the lower jaw were swollen. All over the body, but especially on the lower extremities, were pustules, healed in some places, ulcerated in others and foul. The genitals were healthy, and the inguinal glands moderately enlarged. His strength was very prostrate; he answered me rationally, but in so weak a voice as scarcely to be understood; respiration was laborious and difficult; the breath very offensive; the abdomen rather tumid, but not tender. Black liquid blood, extremely offensive, was discharged involuntarily from his bowels; the skin was dry and hot; the pulse frequent and weak. He died the next day."

Rust subjoins his conviction that both these patients died of the glanders caught from the diseased horses which they took care of*.

* Both cases are published also in Hufeland's *Journal der practischen Heilkunde*, 1822, März. The engraving of Rennspiess is there likewise.

Through the kindness of Mr. Green, I have a copy of an excellent drawing of Dr. Roots's patient by Mr. Kearney; and

III. In the 17th volume, published 1824, is the case of Martin Tesmer, aged 25, who, from the 15th to the 27th of July, 1823, suffered from pain in his limbs, side and head, thirst, loss of appetite, restlessness, and a pricking sensation at the tip of his nose.

About the 29th, inflammation of the left cheek, the nose, and upper lip, and part of the right cheek, came on. Around the nose the skin was particularly hard, dark, and painful. There was considerable pyrexia, &c. August 1, the inflammation had spread, and the tip of the nose seemed suppurating. On the 2d, every symptom was more intense, and the sore on the tip of the nose looked fungous and dirty. The lad, being particularly questioned, stated with much difficulty, that he had some time before had the care of two diseased horses, one of which was affected with a copious discharge from the nostrils, and that he had several times been sprinkled with this, while giving it medicine.

On the 3d, the end of the nose was covered with a hard, painful, gangrenous scab; several pustules as large as peas and filled with yellowish fluid (phlyzaceous), arose around it, and on the upper lip: the whole face was swollen, and the inside of the nose inflamed. On the 4th, the entire face, and inside of the mouth, were inflamed two equally good, the one representing the face during life, and the other after death, presented to me by Mr. Alcock.

and swollen, nearly half the nose destroyed, and the rest covered by a gangrenous scab. There were more pustules on the cheeks, some discharging an acrid ichor: the fever was much more intense. Blood taken from the arm on the 5th day, showed a strong inflammatory buff. On the 6th day, the swelling and destruction of the face proceeded, and even the gums and tongue were implicated: pustules, like those of the face, arose on the chest and extremities.

On the 7th, *a copious stinking ichor proceeded from the nose and mouth*; the gangrene extended; more pustules appeared upon the forehead, the angle of the lower jaw, and the body. The pulse was 130, and small; there was delirium, and colliquative sweats.

On the 8th, the symptoms were all greatly increased; the pulse could not be counted, and death took place. Previously and subsequently to his decease, the stench was excessive; and on this account the body could not be inspected. The horse was examined, and found to have a swelling in the glands of the neck, with a copious mucous and purulent discharge from the nose. When killed, the right lung was full of pus, and the left of abscesses and *tubercles*, although no disease was visible in the mucous membranes of the nostrils.

Dr. Seidler, the regimental physician who attended and published the case, lays particular

stress on the circumstance, that the skin of the patient's nose, and adjoining part of the cheeks, was at all times excessively thin and irritable. It is highly probable, therefore, that some excoriation of the face existed at the time it was sprinkled with glanders matter*.

It is also mentioned, that the proprietor of the glandered horse, who had frequently visited it in the stable, but never touched it, was seized with pyrexia; had several boils; fell into a typhoid state, diarrhœa and delirium; and at last various spots appeared all over the body, many of which became pustules.

In the second part of the 14th volume, is an account, by Dr. Tarozzi of Ostiano, of eleven persons affected, in 1818, in a similar manner, and of whom all but one died, after visiting, with about thirty-five others, an ill-ventilated stable 20 feet square, containing three cows and ten horses, one of which had laboured under an offensive discharge from the nostrils for a twelvemonth, and none of which had left the stable for three months. Violent pyrexia, pains, spasms, boils, and at last a large carbuncle, generally characterised the first stage; gangrenous vesicles and typhus were the chief features of the second. These were not the precise symptoms observed in the preceding cases; and as the parish priest, who closely attended on

* A very coarse and singular engraving is given of this patient's face.

all the patients, also caught the disease, and as a discharge from the nostrils is not stated to have taken place in any one instance, and the accounts are in many respects defective, I dare not give an opinion that this disease, any more than that of the proprietor of the horse which infected Tesmer, was really glanders. It might have been an affection similar to a carbuncular epidemic which seemed to be derived from brutes,—from skinning sheep and oxen that had died of *blutseuche* or *milz-brand*, at Merseburg, in 1822, and described in the first part of the same volume; to the cases of butchers and others affected with gangrenous erysipelas, pustules, carbuncle, &c. apparently from contact, even without abrasion, with the blood of diseased oxen, related by M. Morand*; to the disease described by MM. Enaux and Chaussier, under the title of *Pustule Maligne*†; and to a disease which proved fatal to two men whose hands, though sound, and washed four minutes afterwards, were wetted, in the performance of venesection, with the blood of a cow labouring under *milz-brand*, and in whom the chief local affection was peritoneal inflammation and effusion‡.

* *Histoire de l'Académie Royale des Sciences*, 1766.

† *Méthode de traiter les Morsures, &c. suivie d'un précis sur la Pustule Maligne*, 1785.

‡ Hufeland's *Journal*, 1822. März. Pages 89 sqq. In the same article in which these cases, related by Dr. Meier, Kreis-physikus at Brandenburg, are published by Hufeland, is a short essay by Dr. Wilhelm Remer, Professor at Breslau,

upon those diseases of brutes that are communicable to mankind—*Ein Beitrag zu den bisherigen Beobachtungen von krankheiten der Thiere, welche sich dem Menschen mitgetheilt haben.* Dr. Remer enumerates, besides *Hydrophobia* and *Cow-pock*, the *Milz-brand* or Rinderpest; the *Glanders*, feeling himself justified, from the case of Gottfred Kliess, which he narrates, to declare, in italics, *Der Rotz der Pferde steckt Menschen an*; the *Plica Polonica* or Trichoma, which he asserts may be communicated from man to hairy brutes, and from these again to man; and a cutaneous disease (perhaps the *Itch*), which he says was given in France by a lion to its keepers, and, after its death, to those who skinned it. I have said, perhaps the itch, because M. Biett relates, in his lectures (see the *Lancette Françoise*), that several years ago some camels were taken to the *Jardin des Plantes*, with a very severe itch, of which some of them died, and which was caught by the keepers. Whether, as Dr. Remer gives no reference, this was the occurrence alluded to by him, and he learnt it merely by report, one animal being mistaken for another, I cannot say. Willan mentions, that a “violent form of scabies is excited by the contact of dogs, cats, hogs, and other animals, affected with *mange*.”

In regard to diseases communicable from men to brutes, Dr. Remer enumerates, besides the *Plica Polonica*, measles, which he says have been given to sheep; and the *Plague*, which, if authors are to be relied upon, has been caught by domestic brutes. Those which we receive from brutes, may probably all be given back. We have an experiment, by Magendie, in reference to hydrophobia; and the experiments related in this paper in regard to glanders and cow-pock.

The glanders are generally believed to belong to that class of contagious diseases which, under peculiar circumstances, may be generated without contagion. Mr. Colman states, that in the expedition to Quiberon, in 1795, the horses had not been long on board the transports, which were crowded with them, before it became necessary to shut down the hatches; the consequence of which was, that some were suffocated, and all the rest became either glandered or farcied.

Dr. Ashburner related the following circumstances to the same effect, in the Society, during the conversation which ensued after the paper was read, and has obligingly committed them to writing at my request.

“ It is well known that there are in Bombay several large establishments for the sale of Arabian horses, which are brought to the island from the Gulf. Batches of these, varying in number according to the size of the vessel in which they are shipped, are conveyed by speculators, for sale, to the Bengal market. In August, 1823, I went from Bombay to Calcutta in a ship of 350 tons burthen, on board of which were twenty-eight well-selected horses. They were placed between decks, and my cabin commanded a view of their accommodations. With all the advantages of a free ventilation, fresh breezes, and fine weather, the neighbourhood of these animals was by no means a pleasant situation. An intelligent Arab accompanied them as supercargo. He told me that he always chose for his speculations that period of the year in which the shortest passages were made, the months of July and August; for, during long voyages, it might occasionally become necessary to shut the hatches; and when horses were, under such circumstances, pent up, they were not only affected as to condition, but were apt to generate serious diseases. Within three weeks from the time of embarkation, my Arab friend had his venture safely lodged in the stables of Malaehi Lyons, in Calcutta, where some hundreds of horses were continually on sale. They appeared to be as well, and in as good condition, as when I saw them in the harbour of Bombay. I learned that they were all particularly examined before they were admitted into the stables; for the proprietors of the establishment considered extreme caution to be requisite, in order to prevent the possibility of an infectious disease creeping into his stables.

“ I heard some time afterwards, that a vessel had arrived with twenty-three horses on board, glandered. They had been nearly six weeks on their passage, and it was stated that they were all healthy when they were embarked. They had experienced rough weather, and had suffered from confinement.

I heard, that in consequence of the refusal of the stable-keepers to admit these animals, it was thought expedient to destroy them. This is hearsay evidence, but, I believe, quite true. The next year my brother sent me two horses from Bombay, which accompanied a freight of other Arab horses. The ship had an unfavorable passage, and several of the horses she brought round died before her arrival in the Hooghly. One of those consigned to me was of the number. I was assured all of them had been embarked in healthy condition. It was reported that glanders had been generated among these animals, and I had an opportunity of seeing several of them which were placed under the charge of a stable-keeper, who kept them apart from his other horses. They were out of condition, miserable in appearance, but had no disease of the skin. There was cough, the eyes were watery, and there was a discharge from the nostrils, without, however, a very high degree of inflammation of the mucous membrane. Professor Coleman had, before I left England, taught me to distinguish an ecchymosed state of this membrane from the inflammation of glanders. In these horses there were no vibices in the nostrils, nor did I discover ulceration. The maxillary glands were enlarged. The horse that was landed, consigned to me, was in this state; and as he was an Arab of beautiful symmetry, the stable-keeper parted with him to a person who hoped to cure him by taking him into the country. I heard some time afterwards, that none of these horses recovered, and that it became necessary to destroy them.

“It was not in my power to be more certain than I was, that these horses left Bombay in a healthy state. The enquiries I made upon the subject left no doubt on my mind. Indeed, when we consider the shrewd character of the Arab merchants, the large stake they have at risk, and the obvious interest they have to avoid all sources of contamination for their valuable property, I think there is sufficient reason to conclude that they would not embark diseased horses, to add the expense of freight and provender to a certain loss; nor would they carelessly submit healthy horses to the chances of disease, either in stables or on board ship.”